RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Borehole 51-18-11

Log Event A

Borehole Information

Farm : TX	**Tank :** TX-118	**Site Number :** 299-W15-165
N-Coord : 42,106	**W-Coord :** 75,960	**TOC Elevation :** 668.68
Water Level, ft :	**Date Drilled :** 11/30/1973	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 100	

Borehole Notes:

Equipment Information

Logging System : 2	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 11/1995	**Calibration Reference :** GJPO-HAN-3	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 4/26/1996	**Logging Engineer:** Kim Benham
Start Depth, ft.: 101.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 20.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 4/29/1996	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 21.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Borehole 51-18-11

Log Event A

Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787 Analysis Date : 1/22/1997

Analysis Notes :

The SGLS log of this borehole was completed in two logging runs. The pre- and post-survey field verification spectra for all the logging runs were in conformance with the acceptance criteria established for the peak shape and system efficiency, indicating that the logging system was operating within prescribed specifications. The energy calibration and peak-shape calibration from the verification spectra that most closely matched each individual field spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation. The gain remained stable throughout the data collection activity; after a suitable field verification spectra had been selected, it was not necessary to apply corrections for gain drift during data processing in order to maintain proper peak identification.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

A depth overlap, where data was collected at common depth locations by separate logging runs, occurred between 20 and 21 ft. The concentrations of Cs-137 and the naturally occurring radionuclides were calculated at the overlapping points using the separate data sets. The measured concentrations of Cs-137, K-40, U-238, and Th-232 using the separate data sets were within two standard deviations (95-percent confidence level) of the measurements, indicating acceptable repeatability of the measurements of the gamma-ray spectral peak intensities used in the radioassay calculations.

The man-made radionuclides encountered during the survey were Cs-137 and Co-60. The Cs-137 contamination was detected continuously between the ground surface and 11 ft and 13.5 and 27.5 ft. Detectable quantites of Cs-137 were also measured at 12.5 ft, between 29 and 30 ft, 31 and 33 ft, and intermittently between 33 ft and the bottom of the borehole. Co-60 contamination was detected at a depth of 45 ft. Although the Co-60 radionuclide was recognized at only a single point, the gamma-ray energy peak within the applicable spectra appears to be valid.

The maximum measured Cs-137 concentration was about 20 pCi/g at a depth of 2 ft. Other regions of relatively higher Cs-137 concentration were detected at 7 ft (3 pCi/g), 10 ft (1 pCi/g), 15 ft (about 1 pCi/g), 21 ft (4 pCi/g), and 25 ft (2 pCi/g). The measured Cs-137 concentrations at other points were less than 1 pCi/g. The measured Co-60 concentration at the single point where it was detected (45 ft) was just at the MDL of 0.09 pCi/g.

A step-like increase in the K-40 concentration and in the total gamma-ray count rate was detected at a depth of 48 ft. Measured concentrations were about 12 pCi/g above 49 ft and about 18 pCi/g below this depth. There was a subtle increase in the measured K-40 and Th-232 concentrations below a depth of 96 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank TX-118.

Log Plot Notes:

Separate log plots show the concentrations of the man-made (Cs-137 and Co-60) and the naturally occurring radionuclides (KUT). The natural radionuclides can be used for lithology interpretations. The headings of the

Borehole 51-18-11

Log Event A

plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.